

19964US01_ST25
SEQUENCE LISTING

<110> Sahin, Ugur
Tureci, Oezlem
Koslowski, Michael

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<140> US 10/537,002

<141> 2005-05-20

<150> PCT/EP2003/013091

<151> 2003-11-21

<150> DE 102 54 601.0

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Ser Gln Gly Ile Tyr Leu Thr Asn Arg Tyr Met Ser Ile Ser Leu Val
180 185 190

Thr Ala Ile Ala Val Asp Arg Tyr Val Ala Val Arg His Pro Leu Arg
195 200 205

Ala Arg Gly Leu Arg Ser Pro Arg Gln Ala Ala Ala Val Cys Ala Val
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Leu Trp Val Leu Val Ile Gly Ser Leu Val Ala Arg Trp Leu Leu Gly
225 230 235 240

Ile Gln Glu Gly Gly Phe Cys Phe Arg Ser Thr Arg His Asn Phe Asn
245 250 255

Ser Met Ala Phe Pro Leu Leu Gly Phe Tyr Leu Pro Leu Ala Val Val
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Val Phe Cys Ser Leu Lys Val Val Thr Ala Leu Ala Gln Arg Pro Pro
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Thr Asp Val Gly Gln Ala Glu Ala Thr Arg Lys Ala Ala Arg Met Val
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Trp Ala Asn Leu Leu Val Phe Val Val Cys Phe Leu Pro Leu His Val
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Gly Leu Thr Val Arg Leu Ala Val Gly Trp Asn Ala Cys Ala Leu Leu
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Asn Cys Cys Leu Asp Ala Ile Cys Tyr Tyr Tyr Met Ala Lys Glu Phe
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Ser Gln Asp Ser Leu Cys Val Thr Leu Ala
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Gly Ser Tyr Glu Ile Ser Val Leu Met Met Gly Asn Ser Ala Phe Ala
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Glu Pro Leu Lys Asn Leu Glu Asp Ala Val Asn Glu Gly Leu Glu Ile
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Val Arg Gly Arg Leu Gln Asn Ala Gly Leu Asn Val Thr Val Asn Ala
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Thr Phe Met Tyr Ser Asp Gly Leu Ile His Asn Ser Gly Asp Cys Arg
85 90 95

Ser Ser Thr Cys Glu Gly Leu Asp Leu Leu Arg Lys Ile Ser Asn Ala
100 105 110

Gln Arg Met Gly Cys Val Leu Ile Gly Pro Ser Cys Thr Tyr Ser Thr
115 120 125

Phe Gln Met Tyr Leu Asp Thr Glu Leu Ser Tyr Pro Met Ile Ser Ala
130 135 140

Gly Ser Phe Gly Leu Ser Cys Asp Tyr Lys Glu Thr Leu Thr Arg Leu
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 Thr Asn Asp Leu Pro Phe Lys Thr Tyr Ser Trp Ser Thr Ser Tyr Val
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 195 200 205
 Leu Glu Ala Ser Val Ser Tyr Phe Ser His Glu Leu Gly Phe Lys Val
 210 215 220
 Val Leu Arg Gln Asp Lys Glu Phe Gln Asp Ile Leu Met Asp His Asn
 225 230 235 240
 Arg Lys Ser Asn Val Ile Ile Met Cys Gly Gly Pro Glu Phe Leu Tyr
 245 250 255
 Lys Leu Lys Gly Asp Arg Ala Val Ala Glu Asp Ile Val Ile Ile Leu
 260 265 270
 Val Asp Leu Phe Asn Asp Gln Tyr Leu Glu Asp Asn Val Thr Ala Pro
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 Asp Tyr Met Lys Asn Val Leu Val Leu Thr Leu Ser Pro Gly Asn Ser
 290 295 300
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 305 310 315 320
 Phe Ala Leu Ala Tyr Leu Asn Gly Ile Leu Leu Phe Gly His Met Leu
 325 330 335
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 340 345 350
 His Ala Phe Arg Asn Leu Thr Phe Glu Gly Tyr Asp Gly Pro Val Thr
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 370 375 380
 Ser Val Asp Thr Lys Lys Tyr Lys Val Leu Leu Thr Tyr Asp Thr His
 385 390 395 400
 Val Asn Lys Thr Tyr Pro Val Asp Met Ser Pro Thr Phe Thr Trp Lys
 405 410 415

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Val Ala Leu Leu Met Leu Arg Lys Tyr Arg Lys Asp Tyr Glu Leu Arg
450 455 460

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465 470 475 480

Thr Asn Glu Thr Asn His Val Ser Leu Lys Ile Asp Asp Asp Lys Arg
485 490 495

Arg Asp Thr Ile Gln Arg Leu Arg Gln Cys Lys Tyr Asp Lys Lys Arg
500 505 510

Val Ile Leu Lys Asp Leu Lys His Asn Asp Gly Asn Phe Thr Glu Lys
515 520 525

Gln Lys Ile Glu Leu Asn Lys Leu Leu Gln Ile Asp Tyr Tyr Asn Leu
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Thr Lys Phe Tyr Gly Thr Val Lys Leu Asp Thr Met Ile Phe Gly Val
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565 570 575

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580 585 590

Val Leu Tyr Asp Ile Ala Lys Gly Met Ser Tyr Leu His Ser Ser Lys
595 600 605

Thr Glu Val His Gly Arg Leu Lys Ser Thr Asn Cys Val Val Asp Ser
610 615 620

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625 630 635 640

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Ile Ser Gln Lys Gly Asp Val Tyr Ser Tyr Gly Ile Ile Ala Gln Glu
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725 730 735

Asp Phe Lys Lys Ile Glu Thr Thr Leu Ala Lys Ile Phe Gly Leu Phe
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His Asp Gln Lys Asn Glu Ser Tyr Met Asp Thr Leu Ile Arg Arg Leu
755 760 765

Gln Leu Tyr Ser Arg Asn Leu Glu His Leu Val Glu Glu Arg Thr Gln
770 775 780

Leu Tyr Lys Ala Glu Arg Asp Arg Ala Asp Arg Leu Asn Phe Met Leu
785 790 795 800

Leu Pro Arg Leu Val Val Lys Ser Leu Lys Glu Lys Gly Phe Val Glu
805 810 815

Pro Glu Leu Tyr Glu Glu Val Thr Ile Tyr Phe Ser Asp Ile Val Gly
820 825 830

Phe Thr Thr Ile Cys Lys Tyr Ser Thr Pro Met Glu Val Val Asp Met
835 840 845

Leu Asn Asp Ile Tyr Lys Ser Phe Asp His Ile Val Asp His His Asp
850 855 860

Val Tyr Lys Val Glu Thr Ile Gly Asp Ala Tyr Met Val Ala Ser Gly
865 870 875 880

Leu Pro Lys Arg Asn Gly Asn Arg His Ala Ile Asp Ile Ala Lys Met
885 890 895

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Pro Gly Leu Pro Ile Trp Ile Arg Ile Gly Val His Ser Gly Pro Cys
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925

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 965 970 975

Cys Gln Phe Leu Tyr Glu Val Arg Gly Glu Thr Tyr Leu Lys Gly Arg
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Glu Ser Thr Tyr Phe
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Gly Ser Tyr Glu Ile Ser Val Leu Met Met Gly Asn Ser Ala Phe Ala
 35 40 45

Glu Pro Leu Lys Asn Leu Glu Asp Ala Val Asn Glu Gly Leu Glu Ile
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55

Val Arg Gly Arg Leu Gln Asn Ala Gly Leu Asn Val Thr Val Asn Ala
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Gly Ser Tyr Glu Ile Ser Val Leu Met Met Gly Asn Ser Ala Phe Ala
35 40 45

Glu Pro Leu Lys Asn Leu Glu Asp Ala Val Asn Glu Gly Leu Glu Ile
50 55 60

Val Arg Gly Arg Leu Gln Asn Ala Gly Leu Asn Val Thr Val Asn Ala
65 70 75 80

Thr Phe Met Tyr Ser Asp Gly Leu Ile His Asn Ser Gly Asp Cys Arg
85 90 95

Ser Ser Thr Cys Glu Gly Leu Asp Leu Leu Arg Lys Ile Ser Asn Ala
100 105 110

Gln Arg Met Gly Cys Val Leu Ile Gly Pro Ser Cys Thr Tyr Ser Thr
115 120 125

Phe Gln Met Tyr Leu Asp Thr Glu Leu Ser Tyr Pro Met Ile Ser Ala
130 135 140

Gly Ser Phe Gly Leu Ser Cys Asp Tyr Lys Glu Thr Leu Thr Arg Leu
145 150 155 160

Met Ser Pro Ala Arg Lys Leu Met Tyr Phe Leu Val Asn Phe Trp Lys
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165

170

175

Thr Asn Asp Leu Pro Phe Lys Thr Tyr Ser Trp Ser Thr Ser Tyr Val
180 185 190

Tyr Lys Asn Gly Thr Glu Thr Glu Asp Cys Phe Trp Tyr Leu Asn Ala
195 200 205

Leu Glu Ala Ser Val Ser Tyr Phe Ser His Glu Leu Gly Phe Lys Val
210 215 220

Val Leu Arg Gln Asp Lys Glu Phe Gln Asp Ile Leu Met Asp His Asn
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35 40 45

Glu Pro Leu Lys Asn Leu Glu Asp Ala Val Asn Glu Gly Leu Glu Ile
50 55 60

Val Arg Gly Arg Leu Gln Asn Ala Gly Leu Asn Val Thr Val Asn Ala
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Thr Phe Met Tyr Ser Asp Gly Leu Ile His Asn Ser Gly Asp Cys Arg
85 90 95

Ser Ser Thr Cys Glu Gly Leu Asp Leu Leu Arg Lys Ile Ser Asn Ala
100 105 110

Gln Arg Met Gly Cys Val Leu Ile Gly Pro Ser Cys Thr Tyr Ser Thr
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115

120

125

Phe Gln Met Tyr Leu Asp Thr Glu Leu Ser Tyr Pro Met Ile Ser Ala
 130 135 140

Gly Ser Phe Gly Leu Ser Cys Asp Tyr Lys Glu Thr Leu Thr Arg Leu
 145 150 155 160

Met Ser Pro Ala Arg Lys Leu Met Tyr Phe Leu Val Asn Phe Trp Lys
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Thr Asn Asp Leu Pro Phe Lys Thr Tyr Ser Trp Ser Thr Ser Tyr Val
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Leu Glu Ala Ser Val Ser Tyr Phe Ser His Glu Leu Gly Phe Lys Val
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Val Leu Arg Gln Asp Lys Glu Phe Gln Asp Ile Leu Met Asp His Asn
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 245 250 255

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Val Asp Leu Phe Asn Asp Gln Tyr Leu Glu Asp Asn Val Thr Ala Pro
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Asp Tyr Met Lys Asn Val Leu Val Leu Thr Leu Ser Pro Gly Asn Ser
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Leu Leu Asn Ser Ser Phe Ser Arg Asn Leu Ser Pro Thr Lys Arg Asp
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Phe Ala Leu Ala Tyr Leu Asn Gly Ile Leu Leu Phe Gly His Met Leu
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His Ala Phe Arg Asn Leu Thr Phe Glu Gly Tyr Asp Gly Pro Val Thr
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 Ser Val Asp Thr Lys Lys Tyr Lys Val Leu Leu Thr Tyr Asp Thr His
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 Val Asn Lys Thr Tyr Pro Val Asp Met Ser Pro Thr Phe Thr Trp Lys
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 Val Ala Leu Leu Met Leu Arg Lys Tyr Arg Lys Asp Tyr Glu Leu Arg
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 Thr Asn Glu Thr Asn His Val Ser Leu Lys Ile Asp Asp Asp Lys Arg
 485 490 495
 Arg Asp Thr Ile Gln Arg Leu Arg Gln Cys Lys Tyr Asp Lys Lys Arg
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 Tyr Gly Thr Val Lys Leu Asp Thr Met Ile Phe Gly Val Ile Glu Tyr
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 Cys Glu Arg Gly Ser Leu Arg Glu Val Leu Asn Asp Thr Ile Ser Tyr
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 Pro Asp Gly Thr Phe Met Asp Trp Glu Phe Lys Ile Ser Val Leu Tyr
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 Asp Ile Ala Lys Gly Met Ser Tyr Leu His Ser Ser Lys Thr Glu Val
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 His Gly Arg Leu Lys Ser Thr Asn Cys Val Val Asp Ser Arg Met Val
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625 630 635 640

Asp Leu Trp Thr Ala Pro Glu His Leu Arg Gln Ala Asn Ile Ser Gln
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Lys Gly Asp Val Tyr Ser Tyr Gly Ile Ile Ala Gln Glu Ile Ile Leu
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Arg Lys Glu Thr Phe Tyr Thr Leu Ser Cys Arg Asp Arg Asn Glu Lys
675 680 685

Ile Phe Arg Val Glu Asn Ser Asn Gly Met Lys Pro Phe Arg Pro Asp
690 695 700

Leu Phe Leu Glu Thr Ala Glu Glu Lys Glu Leu Glu Val Tyr Leu Leu
705 710 715 720

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725 730 735

Lys Ile Glu Thr Thr Leu Ala Lys Ile Phe Gly Leu Phe His Asp Gln
740 745 750

Lys Asn Glu Ser Tyr Met Asp Thr Leu Ile Arg Arg Leu Gln Leu Tyr
755 760 765

Ser Arg Asn Leu Glu His Leu Val Glu Glu Arg Thr Gln Leu Tyr Lys
770 775 780

Ala Glu Arg Asp Arg Ala Asp Arg Leu Asn Phe Met Leu Leu Pro Arg
785 790 795 800

Leu Val Val Lys Ser Leu Lys Glu Lys Gly Phe Val Glu Pro Glu Leu
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Tyr Glu Glu Val Thr Ile Tyr Phe Ser Asp Ile Val Gly Phe Thr Thr
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Ile Cys Lys Tyr Ser Thr Pro Met Glu Val Val Asp Met Leu Asn Asp
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Ile Tyr Lys Ser Phe Asp His Ile Val Asp His His Asp Val Tyr Lys
850 855 860

Val Glu Thr Ile Gly Asp Ala Tyr Met Val Ala Ser Gly Leu Pro Lys
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Arg Asn Gly Asn Arg His Ala Ile Asp Ile Ala Lys Met Ala Leu Glu
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Ile Leu Ser Phe Met Gly Thr Phe Glu Leu Glu His Leu Pro Gly Leu
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915 920 925

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930 935 940

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945 950 955 960

Val Ser Gly Ser Thr Ile Ala Ile Leu Lys Arg Thr Glu Cys Gln Phe
965 970 975

Leu Tyr Glu Val Arg Gly Glu Thr Tyr Leu Lys Gly Arg Gly Asn Glu
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Thr Thr Tyr Trp Leu Thr Gly Met Lys Asp Gln Lys Phe Asn Leu Pro
995 1000 1005

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Ser Asp Met Ile Ala Asn Ser Leu Gln Lys Arg Gln Ala Ala Gly
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Ile Arg Ser Gln Lys Pro Arg Arg Val Ala Ser Tyr Lys Lys Gly
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Lys Leu Ala Pro Leu Pro Leu Asp Asn Ile Leu Pro Phe Met Asp Pro
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Leu Lys Leu Leu Leu Lys Thr Leu Gly Ile Ser Val Glu His Leu Val
50 55 60

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35 40 45

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Ala Leu Met Ile Val Gly Ile Val Leu Gly Ala Ile Gly Leu Leu Val
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Ser Ile Phe Ala Leu Lys Cys Ile Arg Ile Gly Ser Met Glu Asp Ser
100 105 110

Ala Lys Ala Asn Met Thr Leu Thr Ser Gly Ile Met Phe Ile Val Ser
115 120 125

Gly Leu Cys Ala Ile Ala Gly Val Ser Val Phe Ala Asn Met Leu Val
130 135 140

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145 150 155 160

Met Val Gln Thr Val Gln Thr Arg Tyr Thr Phe Gly Ala Ala Leu Phe
165 170 175

Val Gly Trp Val Ala Gly Gly Leu Thr Leu Ile Gly Gly Val Met Met
180 185 190

Cys Ile Ala Cys Arg Gly Leu Ala Pro Glu Glu Thr Asn Tyr Lys Ala
195 200 205

Val Ser Tyr His Ala Ser Gly His Ser Val Ala Tyr Lys Pro Gly Gly
210 215 220

Phe Lys Ala Ser Thr Gly Phe Gly Ser Asn Thr Lys Asn Lys Lys Ile
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Lys His Asp Tyr Val
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tcagatgact	tacttcaacg	gatcaaccaa
		540
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tacagggaaa	atttcaagca	aggtggagtt
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 <213> Homo Sapiens

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gagaaaacaa	aaccagttcc	aggatacaat
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 <213> Homo Sapiens

<400> 45

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Val	Phe	Thr	Val	Leu	Val	Leu	Leu	Pro	Leu	Pro	Ile	Val	Leu	His	Thr
			20					25					30		

Lys	Glu	Ala	Glu	Cys	Ala	Tyr	Thr	Leu	Phe	Val	Val	Ala	Thr	Phe	Trp
		35					40					45			

Leu	Thr	Glu	Ala	Leu	Pro	Leu	Ser	Val	Thr	Ala	Leu	Leu	Pro	Ser	Leu
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50

55

Met Leu Pro Met Phe Gly Ile Met Pro Ser Lys Lys Val Ala Ser Ala
65 70 75 80

Tyr Phe Lys Asp Phe His Leu Leu Leu Ile Gly Val Ile Cys Leu Ala
85 90 95

Thr Ser Ile Glu Lys Trp Asn Leu His Lys Arg Ile Ala Leu Lys Met
100 105 110

Val Met Met Val Gly Val Asn Pro Ala Trp Leu Thr Leu Gly Phe Met
115 120 125

Ser Ser Thr Ala Phe Leu Ser Met Trp Leu Ser Asn Thr Ser Thr Ala
130 135 140

Ala Met Val Met Pro Ile Ala Glu Ala Val Val Gln Gln Ile Ile Asn
145 150 155 160

Ala Glu Ala Glu Val Glu Ala Thr Gln Met Thr Tyr Phe Asn Gly Ser
165 170 175

Thr Asn His Gly Leu Glu Ile Asp Glu Ser Val Asn Gly His Glu Ile
180 185 190

Asn Glu Arg Lys Glu Lys Thr Lys Pro Val Pro Gly Tyr Asn Asn Asp
195 200 205

Thr Gly Lys Ile Ser Ser Lys Val Glu Leu Glu Lys Asn Ser Gly Met
210 215 220

Arg Thr Lys Tyr Arg Thr Lys Lys Gly His Val Thr Arg Lys Leu Thr
225 230 235 240

Cys Leu Cys Ile Ala Tyr Ser Ser Thr Ile Gly Gly Leu Thr Thr Ile
245 250 255

Thr Gly Thr Ser Thr Asn Leu Ile Phe Ala Glu Tyr Phe Asn Thr Arg
260 265 270

Tyr Pro Asp Cys Arg Cys Leu Asn Phe Gly Ser Trp Phe Thr Phe Ser
275 280 285

Phe Pro Ala Ala Leu Ile Ile Leu Leu Leu Ser Trp Ile Trp Leu Gln
290 295 300

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Trp Leu Phe Leu Gly Phe Asn Phe Lys Glu Met Phe Lys Cys Gly Lys
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Thr Lys Thr Val Gln Gln Lys Ala Cys Ala Glu Val Ile Lys Gln Glu
 325 330 335

Tyr Gln Lys Leu Gly Pro Ile Arg Tyr Gln Glu Ile Val Thr Leu Val
 340 345 350

Leu Phe Ile Ile Met Ala Leu Leu Trp Phe Ser Arg Asp Pro Gly Phe
 355 360 365

Val Pro Gly Trp Ser Ala Leu Phe Ser Glu Tyr Pro Gly Phe Ala Thr
 370 375 380

Asp Ser Thr Val Ala Leu Leu Ile Gly Leu Leu Phe Phe Leu Ile Pro
 385 390 395 400

Ala Lys Thr Leu Thr Lys Thr Thr Pro Thr Gly Glu Ile Val Ala Phe
 405 410 415

Asp Tyr Ser Pro Leu Ile Thr Trp Lys Glu Phe Gln Ser Phe Met Pro
 420 425 430

Trp Asp Ile Ala Ile Leu Val Gly Gly Gly Phe Ala Leu Ala Asp Gly
 435 440 445

Cys Glu Glu Ser Gly Leu Ser Lys Trp Ile Gly Asn Lys Leu Ser Pro
 450 455 460

Leu Gly Ser Leu Pro Ala Trp Leu Ile Ile Leu Ile Ser Ser Leu Met
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Val Thr Ser Leu Thr Glu Val Ala Ser Asn Pro Ala Thr Ile Thr Leu
 485 490 495

Phe Leu Pro Ile Leu Ser Pro Leu Ala Glu Ala Ile His Val Asn Pro
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Leu Tyr Ile Leu Ile Pro Ser Thr Leu Cys Thr Ser Phe Ala Phe Leu
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Leu Pro Val Ala Asn Pro Pro Asn Ala Ile Val Phe Ser Tyr Gly His
 530 535 540

Leu Lys Val Ile Asp Met Val Lys Ala Gly Leu Gly Val Asn Ile Val
 545 550 555 560

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Gly Val Ala Val Val Met Leu Gly Ile Cys Thr Trp Ile Val Pro Met
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Phe Asp Leu Tyr Thr Tyr Pro Ser Trp Ala Pro Ala Met Ser Asn Glu
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Thr Met Pro
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His Thr Lys Glu Ala Glu Cys Ala Tyr Thr Leu Phe Val Val Ala Thr
35 40 45

Phe Trp Leu Thr Glu Ala Leu Pro Leu Ser Val Thr Ala Leu Leu Pro
50 55 60

Ser Leu Met Leu Pro Met Phe Gly Ile Met Pro Ser Lys Lys Val Ala
65 70 75 80

Ser Ala Tyr Phe Lys Asp Phe His Leu Leu Leu Ile Gly Val Ile Cys
85 90 95

Leu Ala Thr Ser Ile Glu Lys Trp Asn Leu His Lys Arg Ile Ala Leu
100 105 110

Lys Met Val Met Met Val Gly Val Asn Pro Ala Trp Leu Thr Leu Gly
115 120 125

Phe Met Ser Ser Thr Ala Phe Leu Ser Met Trp Leu Ser Asn Thr Ser
130 135 140

Thr Ala Ala Met Val Met Pro Ile Ala Glu Ala Val Val Gln Gln Ile
145 150 155 160

Ile Asn Ala Glu Ala Glu Val Glu Ala Thr Gln Met Thr Tyr Phe Asn
165 170 175

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Gly Ser Thr Asn His Gly Leu Glu Ile Asp Glu Ser Val Asn Gly His
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Glu Ile Asn Glu Arg Lys Glu Lys Thr Lys Pro Val Pro Gly Tyr Asn
195 200 205

Asn Asp Thr Gly Lys Ile Ser Ser Lys Val Glu Leu Glu Lys Thr Val
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20 25 30

Thr Lys Pro Val Pro Gly Tyr Asn Asn Asp Thr Gly Lys Ile Ser Ser
35 40 45

Lys Val Glu Leu Glu Lys His Trp Lys Leu Ala Val Gln Asp Gly Ser
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Pro Ser Pro Ser Val His Ser Val Ser Gln Leu Ala Ala Gln Gly Lys
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Glu Lys Val Glu Gly Ile Cys Thr
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35 40 45

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Lys Tyr Arg Thr Lys Lys Gly His Val Thr Arg Lys Leu Thr Cys Leu
50 55 60

Cys Ile Ala Tyr Ser Ser Thr Ile Gly Gly Leu Thr Thr Ile Thr Gly
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Thr Ser Thr Asn Leu Ile Phe Ala Glu Tyr Phe Asn Thr Phe His Pro
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 <212> DNA
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gaaaattatt ttttttaatt taagtcctaa atatagttaa aataaataat gttttagtaa	780
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ccatgaaaag ctactgatc ctaattcttt ccctttgagg tctctatggc tctgattgta	960
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tgacatccag gtgtccgatg atgacaaggc gggggccacc ttgctcttct caggcatctt	180
tctgggactg gtggggatca cattcactgt catgggctgg atcaaatacc aaggtgtctc	240
ccactttgaa tggaccacag tccttgggcc cgtcctgctg tcagttgggg tgacattcat	300
cctgattgct gtgtgcaagt tcaaaatgct ctctgccag ttgtgcaaag aaagtgagga	360

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tccagagcct atgggggataa ataccagcta cctgcagtct gtggtagagcc cctgcggcct	540
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tata	1324

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gccgccgagc agaggaatca agacctgctc attctttcct cgggggatcc atccagcaat	180
gacatcatct catgctgcca caaggacccc aagtctgggc tgctggggac cagccacgt	240
ccccactgct cattccttca tcctagagac attctgactc tcctccgact gcgctgtgca	300
caggcgtgac aagctctttt acatctcagt ctgcacaact tcaggcactt agcagattga	360
tatgcatcca acaaattattg attgaatatc tgctaaatac ccagtaatgt ttcattgagt	420
attgggtgaa taaaggaatg ctggttcctt ctggccatat taactcctgc acaatactaa	480
gaaaaataaa ttgcactagc tgtggaataa tgtgaatccc aatgtcatct attgaaatat	540
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683

<210> 60
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 <212> PRT
 <213> Homo Sapiens

<400> 60

Met Gly Pro Phe Lys Ser Ser Val Phe Ile Leu Ile Leu His Leu Leu
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Glu Gly Ala Leu Ser Asn Ser Leu Ile Gln Leu Asn Asn Asn Gly Tyr
 20 25 30

Glu Gly Ile Val Val Ala Ile Asp Pro Asn Val Pro Glu Asp Glu Thr
 35 40 45

Leu Ile Gln Gln Ile Lys Asp Met Val Thr Gln Ala Ser Leu Tyr Leu
 50 55 60

Phe Glu Ala Thr Gly Lys Arg Phe Tyr Phe Lys Asn Val Ala Ile Leu
 65 70 75 80

Ile Pro Glu Thr Trp Lys Thr Lys Ala Asp Tyr Val Arg Pro Lys Leu
 85 90 95

Glu Thr Tyr Lys Asn Ala Asp Val Leu Val Ala Glu Ser Thr Pro Pro
 100 105 110

Gly Asn Asp Glu Pro Tyr Thr Glu Gln Met Gly Asn Cys Gly Glu Lys
 115 120 125

Gly Glu Arg Ile His Leu Thr Pro Asp Phe Ile Ala Gly Lys Lys Leu
 130 135 140

Ala Glu Tyr Gly Pro Gln Gly Lys Ala Phe Val His Glu Trp Ala His
 145 150 155 160

Leu Arg Trp Gly Val Phe Asp Glu Tyr Asn Asn Asp Glu Lys Phe Tyr
 165 170 175

Leu Ser Asn Gly Arg Ile Gln Ala Val Arg Cys Ser Ala Gly Ile Thr
 180 185 190

Gly Thr Asn Val Val Lys Lys Cys Gln Gly Gly Ser Cys Tyr Thr Lys
 195 200 205

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Arg Cys Thr Phe Asn Lys Val Thr Gly Leu Tyr Glu Lys Gly Cys Glu
 210 215 220
 Phe Val Leu Gln Ser Arg Gln Thr Glu Lys Ala Ser Ile Met Phe Ala
 225 230 235 240
 Gln His Val Asp Ser Ile Val Glu Phe Cys Thr Glu Gln Asn His Asn
 245 250 255
 Lys Glu Ala Pro Asn Lys Gln Asn Gln Lys Cys Asn Leu Arg Ser Thr
 260 265 270
 Trp Glu Val Ile Arg Asp Ser Glu Asp Phe Lys Lys Thr Thr Pro Met
 275 280 285
 Thr Thr Gln Pro Pro Asn Pro Thr Phe Ser Leu Leu Gln Ile Gly Gln
 290 295 300
 Arg Ile Val Cys Leu Val Leu Asp Lys Ser Gly Ser Met Ala Thr Gly
 305 310 315 320
 Asn Arg Leu Asn Arg Leu Asn Gln Ala Gly Gln Leu Phe Leu Leu Gln
 325 330 335
 Thr Val Glu Leu Gly Ser Trp Val Gly Met Val Thr Phe Asp Ser Ala
 340 345 350
 Ala His Val Gln Ser Glu Leu Ile Gln Ile Asn Ser Gly Ser Asp Arg
 355 360 365
 Asp Thr Leu Ala Lys Arg Leu Pro Ala Ala Ala Ser Gly Gly Thr Ser
 370 375 380
 Ile Cys Ser Gly Leu Arg Ser Ala Phe Thr Val Ile Arg Lys Lys Tyr
 385 390 395 400
 Pro Thr Asp Gly Ser Glu Ile Val Leu Leu Thr Asp Gly Glu Asp Asn
 405 410 415
 Thr Ile Ser Gly Cys Phe Asn Glu Val Lys Gln Ser Gly Ala Ile Ile
 420 425 430
 His Thr Val Ala Leu Gly Pro Ser Ala Ala Gln Glu Leu Glu Glu Leu
 435 440 445
 Ser Lys Met Thr Gly Gly Leu Gln Thr Tyr Ala Ser Asp Gln Val Gln
 450 455 460

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Asn Asn Gly Leu Ile Asp Ala Phe Gly Ala Leu Ser Ser Gly Asn Gly
 465 470 475 480
 Ala Val Ser Gln Arg Ser Ile Gln Leu Glu Ser Lys Gly Leu Thr Leu
 485 490 495
 Gln Asn Ser Gln Trp Met Asn Gly Thr Val Ile Val Asp Ser Thr Val
 500 505 510
 Gly Lys Asp Thr Leu Phe Leu Ile Thr Trp Thr Thr Gln Pro Pro Gln
 515 520 525
 Ile Leu Leu Trp Asp Pro Ser Gly Gln Lys Gln Gly Gly Phe Val Val
 530 535 540
 Asp Lys Asn Thr Lys Met Ala Tyr Leu Gln Ile Pro Gly Ile Ala Lys
 545 550 555 560
 Val Gly Thr Trp Lys Tyr Ser Leu Gln Ala Ser Ser Gln Thr Leu Thr
 565 570 575
 Leu Thr Val Thr Ser Arg Ala Ser Asn Ala Thr Leu Pro Pro Ile Thr
 580 585 590
 Val Thr Ser Lys Thr Asn Lys Asp Thr Ser Lys Phe Pro Ser Pro Leu
 595 600 605
 Val Val Tyr Ala Asn Ile Arg Gln Gly Ala Ser Pro Ile Leu Arg Ala
 610 615 620
 Ser Val Thr Ala Leu Ile Glu Ser Val Asn Gly Lys Thr Val Thr Leu
 625 630 635 640
 Glu Leu Leu Asp Asn Gly Ala Gly Ala Asp Ala Thr Lys Asp Asp Gly
 645 650 655
 Val Tyr Ser Arg Tyr Phe Thr Thr Tyr Asp Thr Asn Gly Arg Tyr Ser
 660 665 670
 Val Lys Val Arg Ala Leu Gly Gly Val Asn Ala Ala Arg Arg Arg Val
 675 680 685
 Ile Pro Gln Gln Ser Gly Ala Leu Tyr Ile Pro Gly Trp Ile Glu Asn
 690 695 700
 Asp Glu Ile Gln Trp Asn Pro Pro Arg Pro Glu Ile Asn Lys Asp Asp
 705 710 715 720

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Val Gln His Lys Gln Val Cys Phe Ser Arg Thr Ser Ser Gly Gly Ser
725 730 735

Phe Val Ala Ser Asp Val Pro Asn Ala Pro Ile Pro Asp Leu Phe Pro
740 745 750

Pro Gly Gln Ile Thr Asp Leu Lys Ala Glu Ile His Gly Gly Ser Leu
755 760 765

Ile Asn Leu Thr Trp Thr Ala Pro Gly Asp Asp Tyr Asp His Gly Thr
770 775 780

Ala His Lys Tyr Ile Ile Arg Ile Ser Thr Ser Ile Leu Asp Leu Arg
785 790 795 800

Asp Lys Phe Asn Glu Ser Leu Gln Val Asn Thr Thr Ala Leu Ile Pro
805 810 815

Lys Glu Ala Asn Ser Glu Glu Val Phe Leu Phe Lys Pro Glu Asn Ile
820 825 830

Thr Phe Glu Asn Gly Thr Asp Leu Phe Ile Ala Ile Gln Ala Val Asp
835 840 845

Lys Val Asp Leu Lys Ser Glu Ile Ser Asn Ile Ala Arg Val Ser Leu
850 855 860

Phe Ile Pro Pro Gln Thr Pro Pro Glu Thr Pro Ser Pro Asp Glu Thr
865 870 875 880

Ser Ala Pro Cys Pro Asn Ile His Ile Asn Ser Thr Ile Pro Gly Ile
885 890 895

His Ile Leu Lys Ile Met Trp Lys Trp Ile Gly Glu Leu Gln Leu Ser
900 905 910

Ile Ala

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<212> PRT
<213> Homo Sapiens

<400> 61

Met Lys Lys Glu Gly Arg Lys Arg Trp Lys Arg Lys Glu Asp Lys Lys
1 5 10 15

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Arg Val Val Val Ser Asn Leu Leu Phe Glu Gly Trp Ser His Lys Glu
20 25 30

Asn Pro Asn Arg His His Arg Gly Asn Gln Ile Lys Thr Ser Lys Tyr
35 40 45

Thr Val Leu Ser Phe Val Pro Lys Asn Ile Phe Glu Gln Leu His Arg
50 55 60

Phe Ala Asn Leu Tyr Phe Val Gly Ile Ala Val Leu Asn Phe Ile Pro
65 70 75 80

Val Val Asn Ala Phe Gln Pro Glu Val Ser Met Ile Pro Ile Cys Val
85 90 95

Ile Leu Ala Val Thr Ala Ile Lys Asp Ala Trp Glu Asp Leu Arg Arg
100 105 110

Tyr Lys Ser Asp Lys Val Ile Asn Asn Arg Glu Cys Leu Ile Tyr Ser
115 120 125

Arg Lys Glu Gln Thr Tyr Val Gln Lys Cys Trp Lys Asp Val Arg Val
130 135 140

Gly Asp Phe Ile Gln Met Lys Cys Asn Glu Ile Val Pro Ala Asp Ile
145 150 155 160

Leu Leu Leu Phe Ser Ser Asp Pro Asn Gly Ile Cys His Leu Glu Thr
165 170 175

Ala Ser Leu Asp Gly Glu Thr Asn Leu Lys Gln Arg Arg Val Val Lys
180 185 190

Gly Phe Ser Gln Gln Glu Val Gln Phe Glu Pro Glu Leu Phe His Asn
195 200 205

Thr Ile Val Cys Glu Lys Pro Asn Asn His Leu Asn Lys Phe Lys Gly
210 215 220

Tyr Met Glu His Pro Asp Gln Thr Arg Thr Gly Phe Gly Cys Glu Ser
225 230 235 240

Leu Leu Leu Arg Gly Cys Thr Ile Arg Asn Thr Glu Met Ala Val Gly
245 250 255

Ile Val Ile Tyr Ala Gly His Glu Thr Lys Ala Met Leu Asn Asn Ser
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265

270

Gly Pro Arg Tyr Lys Arg Ser Lys Ile Glu Arg Arg Met Asn Ile Asp
 275 280 285

Ile Phe Phe Cys Ile Gly Ile Leu Ile Leu Met Cys Leu Ile Gly Ala
 290 295 300

Val Gly His Ser Ile Trp Asn Gly Thr Phe Glu Glu His Pro Pro Phe
 305 310 315 320

Asp Val Pro Asp Ala Asn Gly Ser Phe Leu Pro Ser Ala Leu Gly Gly
 325 330 335

Phe Tyr Met Phe Leu Thr Met Ile Ile Leu Leu Gln Val Leu Ile Pro
 340 345 350

Ile Ser Leu Tyr Val Ser Ile Glu Leu Val Lys Leu Gly Gln Val Phe
 355 360 365

Phe Leu Ser Asn Asp Leu Asp Leu Tyr Asp Glu Glu Thr Asp Leu Ser
 370 375 380

Ile Gln Cys Arg Ala Leu Asn Ile Ala Glu Asp Leu Gly Gln Ile Gln
 385 390 395 400

Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr Glu Asn Lys Met Val
 405 410 415

Phe Arg Arg Cys Thr Ile Met Gly Ser Glu Tyr Ser His Gln Glu Asn
 420 425 430

Gly Ile Glu Ala Pro Lys Gly Ser Ile Pro Leu Ser Lys Arg Lys Tyr
 435 440 445

Pro Ala Leu Leu Arg Asn Glu Glu Ile Lys Asp Ile Leu Leu Ala Leu
 450 455 460

Leu Glu Ala Val Trp His Phe His Lys Leu Leu Pro Val Ser Leu Trp
 465 470 475 480

Ser Ser Leu Ser Gln Ile Arg Ala Val Pro Ile Thr Cys Lys Leu Ser
 485 490 495

Phe Val Tyr Lys Gly
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<210> 62
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 <212> PRT
 <213> Homo Sapiens

<400> 62

Met Gly Arg Arg Ser Pro Phe Lys Pro Arg Asn Lys Val Phe Gly Phe
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Ser Tyr Pro Trp Cys Arg Ser Tyr Gln Pro Phe Pro Arg Lys Arg Ala
 20 25 30

Trp Pro Pro Ser Arg Val Trp Leu Gly Ala Cys Cys Ala Ser Leu Ala
 35 40 45

Ser Pro Pro Lys Gly Thr Ile Pro Ser Gly Glu Tyr Tyr Arg Pro Ala
 50 55 60

Pro Ser Ser Ser Gly Asp Ser Leu Arg Arg Glu Ser Gly Ala Leu Leu
 65 70 75 80

Gln Tyr Leu Pro Ser Leu Ala Ser Pro Cys Ala Asn His Ala Thr Arg
 85 90 95

Cys Ser Leu Leu Phe Pro Ile Tyr Lys Ile Lys Met Thr Leu Leu Tyr
 100 105 110

Leu Thr Gly Leu Ala Arg Thr His Cys Cys Cys Leu Ala Asp Arg Cys
 115 120 125

Ala Glu Ala Val Glu Ser Ala Phe Tyr Leu Val Gly Ser Leu Cys Ile
 130 135 140

Asn Ala Arg Gly Ala Ala His Leu Thr Asp
 145 150

<210> 63
 <211> 484
 <212> PRT
 <213> Homo Sapiens

<400> 63

Met Ala Gly Pro Trp Thr Phe Thr Leu Leu Cys Gly Leu Leu Ala Ala
 1 5 10 15

Thr Leu Ile Gln Ala Thr Leu Ser Pro Thr Ala Val Leu Ile Leu Gly
 20 25 30

Pro Lys Val Ile Lys Glu Lys Leu Thr Gln Glu Leu Lys Asp His Asn
 Page 55

35

40

45

Ala Thr Ser Ile Leu Gln Gln Leu Pro Leu Leu Ser Ala Met Arg Glu
 50 55 60

Lys Pro Ala Gly Gly Ile Pro Val Leu Gly Ser Leu Val Asn Thr Val
 65 70 75 80

Leu Lys His Ile Ile Trp Leu Lys Val Ile Thr Ala Asn Ile Leu Gln
 85 90 95

Leu Gln Val Lys Pro Ser Ala Asn Asp Gln Glu Leu Leu Val Lys Ile
 100 105 110

Pro Leu Asp Met Val Ala Gly Phe Asn Thr Pro Leu Val Lys Thr Ile
 115 120 125

Val Glu Phe His Met Thr Thr Glu Ala Gln Ala Thr Ile Arg Met Asp
 130 135 140

Thr Ser Ala Ser Gly Pro Thr Arg Leu Val Leu Ser Asp Cys Ala Thr
 145 150 155 160

Ser His Gly Ser Leu Arg Ile Gln Leu Leu His Lys Leu Ser Phe Leu
 165 170 175

Val Asn Ala Leu Ala Lys Gln Val Met Asn Leu Leu Val Pro Ser Leu
 180 185 190

Pro Asn Leu Val Lys Asn Gln Leu Cys Pro Val Ile Glu Ala Ser Phe
 195 200 205

Asn Gly Met Tyr Ala Asp Leu Leu Gln Leu Val Lys Val Pro Ile Ser
 210 215 220

Leu Ser Ile Asp Arg Leu Glu Phe Asp Leu Leu Tyr Pro Ala Ile Lys
 225 230 235 240

Gly Asp Thr Ile Gln Leu Tyr Leu Gly Ala Lys Leu Leu Asp Ser Gln
 245 250 255

Gly Lys Val Thr Lys Trp Phe Asn Asn Ser Ala Ala Ser Leu Thr Met
 260 265 270

Pro Thr Leu Asp Asn Ile Pro Phe Ser Leu Ile Val Ser Gln Asp Val
 275 280 285

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Val Lys Ala Ala Val Ala Ala Val Leu Ser Pro Glu Glu Phe Met Val
290 295 300

Leu Leu Asp Ser Val Leu Pro Glu Ser Ala His Arg Leu Lys Ser Ser
305 310 315 320

Ile Gly Leu Ile Asn Glu Lys Ala Ala Asp Lys Leu Gly Ser Thr Gln
325 330 335

Ile Val Lys Ile Leu Thr Gln Asp Thr Pro Glu Phe Phe Ile Asp Gln
340 345 350

Gly His Ala Lys Val Ala Gln Leu Ile Val Leu Glu Val Phe Pro Ser
355 360 365

Ser Glu Ala Leu Arg Pro Leu Phe Thr Leu Gly Ile Glu Ala Ser Ser
370 375 380

Glu Ala Gln Phe Tyr Thr Lys Gly Asp Gln Leu Ile Leu Asn Leu Asn
385 390 395 400

Asn Ile Ser Ser Asp Arg Ile Gln Leu Met Asn Ser Gly Ile Gly Trp
405 410 415

Phe Gln Pro Asp Val Leu Lys Asn Ile Ile Thr Glu Ile Ile His Ser
420 425 430

Ile Leu Leu Pro Asn Gln Asn Gly Lys Leu Arg Ser Gly Val Pro Val
435 440 445

Ser Leu Val Lys Ala Leu Gly Phe Glu Ala Ala Glu Ser Ser Leu Thr
450 455 460

Lys Asp Ala Leu Val Leu Thr Pro Ala Ser Leu Trp Lys Pro Ser Ser
465 470 475 480

Pro Val Ser Gln

<210> 64
<211> 256
<212> PRT
<213> Homo Sapiens

<400> 64

Met Phe Gln Thr Gly Gly Leu Ile Val Phe Tyr Gly Leu Leu Ala Gln
1 5 10 15

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Thr Met Ala Gln Phe Gly Gly Leu Pro Val Pro Leu Asp Gln Thr Leu
20 25 30

Pro Leu Asn Val Asn Pro Ala Leu Pro Leu Ser Pro Thr Gly Leu Ala
35 40 45

Gly Ser Leu Thr Asn Ala Leu Ser Asn Gly Leu Leu Ser Gly Gly Leu
50 55 60

Leu Gly Ile Leu Glu Asn Leu Pro Leu Leu Asp Ile Leu Lys Pro Gly
65 70 75 80

Gly Gly Thr Ser Gly Gly Leu Leu Gly Gly Leu Leu Gly Lys Val Thr
85 90 95

Ser Val Ile Pro Gly Leu Asn Asn Ile Ile Asp Ile Lys Val Thr Asp
100 105 110

Pro Gln Leu Leu Glu Leu Gly Leu Val Gln Ser Pro Asp Gly His Arg
115 120 125

Leu Tyr Val Thr Ile Pro Leu Gly Ile Lys Leu Gln Val Asn Thr Pro
130 135 140

Leu Val Gly Ala Ser Leu Leu Arg Leu Ala Val Lys Leu Asp Ile Thr
145 150 155 160

Ala Glu Ile Leu Ala Val Arg Asp Lys Gln Glu Arg Ile His Leu Val
165 170 175

Leu Gly Asp Cys Thr His Ser Pro Gly Ser Leu Gln Ile Ser Leu Leu
180 185 190

Asp Gly Leu Gly Pro Leu Pro Ile Gln Gly Leu Leu Asp Ser Leu Thr
195 200 205

Gly Ile Leu Asn Lys Val Leu Pro Glu Leu Val Gln Gly Asn Val Cys
210 215 220

Pro Leu Val Asn Glu Val Leu Arg Gly Leu Asp Ile Thr Leu Val His
225 230 235 240

Asp Ile Val Asn Met Leu Ile His Gly Leu Gln Phe Val Ile Lys Val
245 250 255

<210> 65
<211> 791
<212> PRT

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<213> Homo Sapiens

<400> 65

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Leu Thr Leu Phe Asp Asp Glu Phe Glu Lys Lys Asp Arg Thr Tyr Pro
 20 25 30

Val Gly Glu Lys Leu Arg Asn Ala Phe Arg Cys Ser Ser Ala Lys Ile
 35 40 45

Lys Ala Val Val Phe Gly Leu Leu Pro Val Leu Ser Trp Leu Pro Lys
 50 55 60

Tyr Lys Ile Lys Asp Tyr Ile Ile Pro Asp Leu Leu Gly Gly Leu Ser
 65 70 75 80

Gly Gly Ser Ile Gln Val Pro Gln Gly Met Ala Phe Ala Leu Leu Ala
 85 90 95

Asn Leu Pro Ala Val Asn Gly Leu Tyr Ser Ser Phe Phe Pro Leu Leu
 100 105 110

Thr Tyr Phe Phe Leu Gly Gly Val His Gln Met Val Pro Gly Thr Phe
 115 120 125

Ala Val Ile Ser Ile Leu Val Gly Asn Ile Cys Leu Gln Leu Ala Pro
 130 135 140

Glu Ser Lys Phe Gln Val Phe Asn Asn Ala Thr Asn Glu Ser Tyr Val
 145 150 155 160

Asp Thr Ala Ala Met Glu Ala Glu Arg Leu His Val Ser Ala Thr Leu
 165 170 175

Ala Cys Leu Thr Ala Ile Ile Gln Met Gly Leu Gly Phe Met Gln Phe
 180 185 190

Gly Phe Val Ala Ile Tyr Leu Ser Glu Ser Phe Ile Arg Gly Phe Met
 195 200 205

Thr Ala Ala Gly Leu Gln Ile Leu Ile Ser Val Leu Lys Tyr Ile Phe
 210 215 220

Gly Leu Thr Ile Pro Ser Tyr Thr Gly Pro Gly Ser Ile Val Phe Thr
 225 230 235 240

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Phe Ile Asp Ile Cys Lys Asn Leu Pro His Thr Asn Ile Ala Ser Leu
 245 250 255
 Ile Phe Ala Leu Ile Ser Gly Ala Phe Leu Val Leu Val Lys Glu Leu
 260 265 270
 Asn Ala Arg Tyr Met His Lys Ile Arg Phe Pro Ile Pro Thr Glu Met
 275 280 285
 Ile Val Val Val Val Ala Thr Ala Ile Ser Gly Gly Cys Lys Met Pro
 290 295 300
 Lys Lys Tyr His Met Gln Ile Val Gly Glu Ile Gln Arg Gly Phe Pro
 305 310 315 320
 Thr Pro Val Ser Pro Val Val Ser Gln Trp Lys Asp Met Ile Gly Thr
 325 330 335
 Ala Phe Ser Leu Ala Ile Val Ser Tyr Val Ile Asn Leu Ala Met Gly
 340 345 350
 Arg Thr Leu Ala Asn Lys His Gly Tyr Asp Val Asp Ser Asn Gln Glu
 355 360 365
 Met Ile Ala Leu Gly Cys Ser Asn Phe Phe Gly Ser Phe Phe Lys Ile
 370 375 380
 His Val Ile Cys Cys Ala Leu Ser Val Thr Leu Ala Val Asp Gly Ala
 385 390 395 400
 Gly Gly Lys Ser Gln Val Ala Ser Leu Cys Val Ser Leu Val Val Met
 405 410 415
 Ile Thr Met Leu Val Leu Gly Ile Tyr Leu Tyr Pro Leu Pro Lys Ser
 420 425 430
 Val Leu Gly Ala Leu Ile Ala Val Asn Leu Lys Asn Ser Leu Lys Gln
 435 440 445
 Leu Thr Asp Pro Tyr Tyr Leu Trp Arg Lys Ser Lys Leu Asp Cys Cys
 450 455 460
 Ile Trp Val Val Ser Phe Leu Ser Ser Phe Phe Leu Ser Leu Pro Tyr
 465 470 475 480
 Gly Val Ala Val Gly Val Ala Phe Ser Val Leu Val Val Val Phe Gln
 485 490 495

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Thr Gln Phe Arg Asn Gly Tyr Ala Leu Ala Gln Val Met Asp Thr Asp
500 505 510

Ile Tyr Val Asn Pro Lys Thr Tyr Asn Arg Ala Gln Asp Ile Gln Gly
515 520 525

Ile Lys Ile Ile Thr Tyr Cys Ser Pro Leu Tyr Phe Ala Asn Ser Glu
530 535 540

Ile Phe Arg Gln Lys Val Ile Ala Lys Thr Gly Met Asp Pro Gln Lys
545 550 555 560

Val Leu Leu Ala Lys Gln Lys Tyr Leu Lys Lys Gln Glu Lys Arg Arg
565 570 575

Met Arg Pro Thr Gln Gln Arg Arg Ser Leu Phe Met Lys Thr Lys Thr
580 585 590

Val Ser Leu Gln Glu Leu Gln Gln Asp Phe Glu Asn Ala Pro Pro Thr
595 600 605

Asp Pro Asn Asn Asn Gln Thr Pro Ala Asn Gly Thr Ser Val Ser Tyr
610 615 620

Ile Thr Phe Ser Pro Asp Ser Ser Ser Pro Ala Gln Ser Glu Pro Pro
625 630 635 640

Ala Ser Ala Glu Ala Pro Gly Glu Pro Ser Asp Met Leu Ala Ser Val
645 650 655

Pro Pro Phe Val Thr Phe His Thr Leu Ile Leu Asp Met Ser Gly Val
660 665 670

Ser Phe Val Asp Leu Met Gly Ile Lys Ala Leu Ala Lys Leu Ser Ser
675 680 685

Thr Tyr Gly Lys Ile Gly Val Lys Val Phe Leu Val Asn Ile His Ala
690 695 700

Gln Val Tyr Asn Asp Ile Ser His Gly Gly Val Phe Glu Asp Gly Ser
705 710 715 720

Leu Glu Cys Lys His Val Phe Pro Ser Ile His Asp Ala Val Leu Phe
725 730 735

Ala Gln Ala Asn Ala Arg Asp Val Thr Pro Gly His Asn Phe Gln Gly
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740

745

750

Ala Pro Gly Asp Ala Glu Leu Ser Leu Tyr Asp Ser Glu Glu Asp Ile
 755 760 765

Arg Ser Tyr Trp Asp Leu Glu Gln Glu Met Phe Gly Ser Met Phe His
 770 775 780

Ala Glu Thr Leu Thr Ala Leu
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<400> 66

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 35 40 45

Leu Val Gly Ile Thr Phe Thr Val Met Gly Trp Ile Lys Tyr Gln Gly
 50 55 60

Val Ser His Phe Glu Trp Thr Gln Leu Leu Gly Pro Val Leu Leu Ser
 65 70 75 80

Val Gly Val Thr Phe Ile Leu Ile Ala Val Cys Lys Phe Lys Met Leu
 85 90 95

Ser Cys Gln Leu Cys Lys Glu Ser Glu Glu Arg Val Pro Asp Ser Glu
 100 105 110

Gln Thr Pro Gly Gly Pro Ser Phe Val Phe Thr Gly Ile Asn Gln Pro
 115 120 125

Ile Thr Phe His Gly Ala Thr Val Val Gln Tyr Ile Pro Pro Pro Tyr
 130 135 140

Gly Ser Pro Glu Pro Met Gly Ile Asn Thr Ser Tyr Leu Gln Ser Val
 145 150 155 160

Val Ser Pro Cys Gly Leu Ile Thr Ser Gly Gly Ala Ala Ala Ala Met
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Ser Ser Pro Pro Gln Tyr Tyr Thr Ile Tyr Pro Gln Asp Asn Ser Ala
180 185 190

Phe Val Val Asp Glu Gly Cys Leu Ser Phe Thr Asp Gly Gly Asn His
195 200 205

Arg Pro Asn Pro Asp Val Asp Gln Leu Glu Glu Thr Gln Leu Glu Glu
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caggctgtgg tgtagattaa gtagacaagg aatgtgaata atgcttagat cttattgatg	2100
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aaaaa	2165

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 20 25 30

Gly Glu Asp Ala Ala Phe Ser Cys Phe Leu Ser Pro Lys Thr Asn Ala
 35 40 45

Glu Ala Met Glu Val Arg Phe Phe Arg Gly Gln Phe Ser Ser Val Val
 50 55 60

His Leu Tyr Arg Asp Gly Lys Asp Gln Pro Phe Met Gln Met Pro Gln
 65 70 75 80

Tyr Gln Gly Arg Thr Lys Leu Val Lys Asp Ser Ile Ala Glu Gly Arg
 85 90 95

Ile Ser Leu Arg Leu Glu Asn Ile Thr Val Leu Asp Ala Gly Leu Tyr
 100 105 110

Gly Cys Arg Ile Ser Ser Gln Ser Tyr Tyr Gln Lys Ala Ile Trp Glu
 115 120 125

Leu Gln Val Ser Ala Leu Gly Ser Val Pro Leu Ile Ser Ile Thr Gly
 130 135 140

Tyr Val Asp Arg Asp Ile Gln Leu Leu Cys Gln Ser Ser Gly Trp Phe
 145 150 155 160

Pro Arg Pro Thr Ala Lys Trp Lys Gly Pro Gln Gly Gln Asp Leu Ser
 165 170 175

Thr Asp Ser Arg Thr Asn Arg Asp Met His Gly Leu Phe Asp Val Glu
 180 185 190

Ile Ser Leu Thr Val Gln Glu Asn Ala Gly Ser Ile Ser Cys Ser Met
 195 200 205

Arg His Ala His Leu Ser Arg Glu Val Glu Ser Arg Val Gln Ile Gly
 210 215 220

Asp Thr Phe Phe Glu Pro Ile Ser Trp His Leu Ala Thr Lys Val Leu
 225 230 235 240

Gly Ile Leu Cys Cys Gly Leu Phe Phe Gly Ile Val Gly Leu Lys Ile
 245 250 255

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Phe Phe Ser Lys Phe Gln Cys Lys Arg Glu Arg Glu Ala Trp Ala Gly
260 265 270

Ala Leu Phe Met Val Pro Ala Gly Thr Gly Ser Glu Met Leu Pro His
275 280 285

Pro Ala Ala Ser Leu Leu Leu Val Leu Ala Ser Arg Gly Pro Gly Pro
290 295 300

Lys Lys Glu Asn Pro Gly Gly Thr Gly Leu Glu Lys Lys Ala Arg Thr
305 310 315 320

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325 330 335

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Cys Phe Arg Ser Thr Arg His Asn Phe Asn Ser Met Arg
 1 5 10

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Pro Ala Ile Lys Leu Gly
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<211> 22
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Asn Ser Met Arg Phe Pro
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<211> 30
<212> PRT
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Ala Lys Glu Phe Gln Glu Ala Ser Ala Leu Ala Val Ala Pro Arg Ala
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Lys Ala His Lys Ser Gln Asp Ser Leu Cys Val Thr Leu Ala
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22

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 20 25 30

Val Ser Leu Lys Ile Asp Asp Asp Lys Arg Arg Asp Thr Ile Gln Arg
 35 40 45

Leu Arg Gln Cys Lys Tyr Asp Lys Lys Arg Val Ile Leu Lys Asp Leu
 50 55 60

Lys His Asn Asp Gly Asn Phe Thr Glu Lys Gln Lys Ile Glu Leu Asn
 65 70 75 80

Lys Leu Leu Gln Ile Asp Tyr Tyr Asn Leu Thr Lys Phe Tyr Gly Thr
 85 90 95

Val Lys Leu Asp Thr Met Ile Phe Gly Val Ile Glu Tyr Cys Glu Arg
 100 105 110

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Gly Ser Leu Arg Glu Val Leu Asn Asp Thr Ile Ser Tyr Pro Asp Gly
115 120 125

Thr Phe Met Asp Trp Glu Phe Lys Ile Ser Val Leu Tyr Asp Ile Ala
130 135 140

Lys Gly Met Ser Tyr Leu His Ser Ser Lys Thr Glu Val His Gly Arg
145 150 155 160

Leu Lys Ser Thr Asn Cys Val Val Asp Ser Arg Met Val Val Lys Ile
165 170 175

Thr Asp Phe Gly Cys Asn Ser Ile Leu Pro Pro Lys Lys Asp Leu Trp
180 185 190

Thr Ala Pro Glu His Leu Arg Gln Ala Asn Ile Ser Gln Lys Gly Asp
195 200 205

Val Tyr Ser Tyr Gly Ile Ile Ala Gln Glu Ile Ile Leu Arg Lys Glu
210 215 220

Thr Phe Tyr Thr Leu Ser Cys Arg Asp Arg Asn Glu Lys Ile Phe Arg
225 230 235 240

Val Glu Asn Ser Asn Gly Met Lys Pro Phe Arg Pro Asp Leu Phe Leu
245 250 255

Glu Thr Ala Glu Glu Lys Glu Leu Glu Val Tyr Leu Leu Val Lys Asn
260 265 270

Cys Trp Glu Glu Asp Pro Glu Lys Arg Pro Asp Phe Lys Lys Ile Glu
275 280 285

Thr Thr Leu Ala Lys Ile Phe Gly Leu Phe His Asp Gln Lys Asn Glu
290 295 300

Ser Tyr Met Asp Thr Leu Ile Arg Arg Leu Gln Leu Tyr Ser Arg Asn
305 310 315 320

Leu Glu His Leu Val Glu Glu Arg Thr Gln Leu Tyr Lys Ala Glu Arg
325 330 335

Asp Arg Ala Asp Arg Leu Asn Phe Met Leu Leu Pro Arg Leu Val Val
340 345 350

Lys Ser Leu Lys Glu Lys Gly Phe Val Glu Pro Glu Leu Tyr Glu Glu

355

360

365

Val Thr Ile Tyr Phe Ser Asp Ile Val Gly Phe Thr Thr Ile Cys Lys
 370 375 380

Tyr Ser Thr Pro Met Glu Val Val Asp Met Leu Asn Asp Ile Tyr Lys
 385 390 395 400

Ser Phe Asp His Ile Val Asp His His Asp Val Tyr Lys Val Glu Thr
 405 410 415

Ile Gly Asp Ala Tyr Met Val Ala Ser Gly Leu Pro Lys Arg Asn Gly
 420 425 430

Asn Arg His Ala Ile Asp Ile Ala Lys Met Ala Leu Glu Ile Leu Ser
 435 440 445

Phe Met Gly Thr Phe Glu Leu Glu His Leu Pro Gly Leu Pro Ile Trp
 450 455 460

Ile Arg Ile Gly Val His Ser Gly Pro Cys Ala Ala Gly Val Val Gly
 465 470 475 480

Ile Lys Met Pro Arg Tyr Cys Leu Phe Gly Asp Thr Val Asn Thr Ala
 485 490 495

Ser Arg Met Glu Ser Thr Gly Leu Pro Leu Arg Ile His Val Ser Gly
 500 505 510

Ser Thr Ile Ala Ile Leu Lys Arg Thr Glu Cys Gln Phe Leu Tyr Glu
 515 520 525

Val Arg Gly Glu Thr Tyr Leu Lys Gly Arg Gly Asn Glu Thr Thr Tyr
 530 535 540

Trp Leu Thr Gly Met Lys Asp Gln Lys Phe Asn Leu Pro Thr Pro Pro
 545 550 555 560

Thr Val Glu Asn Gln Gln Arg Leu Gln Ala Glu Phe Ser Asp Met Ile
 565 570 575

Ala Asn Ser Leu Gln Lys Arg Gln Ala Ala Gly Ile Arg Ser Gln Lys
 580 585 590

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 50 55

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20 25 30

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35 40 45

Leu Gln Ala Val Arg
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<210> 115

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<212> PRT

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 aaccccgta cctccgtgtt ccagtacgaa gggctctgga ggagctgcgt gaggcagagt 180
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 35 40 45

Leu Trp Arg Ser Cys Val Arg Gln Ser Ser Gly Phe Thr Glu Cys Arg
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Pro Tyr Phe Thr Ile Leu Gly Leu Pro Ala Met Leu Gln Ala Val Arg
 65 70 75 80

Ala Leu Met Ile Val Gly Ile Val Leu Gly Ala Ile Gly Leu Leu Val
 85 90 95

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100 105 110

Ala Lys Ala Asn Met Thr Leu Thr Ser Gly Ile Met Phe Ile Val Ser
115 120 125

Gly Leu Cys Ala Ile Ala Gly Val Ser Val Phe Ala Asn Met Leu Val
130 135 140

Thr Asn Phe Trp Met Ser Thr Ala Asn Met Tyr Thr Gly Met Gly Gly
145 150 155 160

Met Val Gln Thr Val Gln Thr Arg Tyr Thr Phe Gly Ala Ala Leu Phe
165 170 175

Val Gly Trp Val Ala Gly Gly Leu Thr Leu Ile Gly Gly Val Met Met
180 185 190

Cys Ile Ala Cys Arg Gly Leu Ala Pro Glu Glu Thr Asn Tyr Lys Ala
195 200 205

Val Ser Tyr His Ala Ser Gly His Ser Val Ala Tyr Lys Pro Gly Gly
210 215 220

Phe Lys Ala Ser Thr Gly Phe Gly Ser Asn Thr Lys Asn Lys Lys Ile
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245 250 255

Lys His Asp Tyr Val
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